UNITED STATES PATENT AND TRADEMARK OFFICE

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10/584,010	06/21/2006	Shiliang Li	97693	4805

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/584,010	LI ET AL.
Office Action Summary	Examiner	Art Unit	
	ALEXANDRIA Y. BROMELL	2167	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>18 January 2008</u>.

2a)☐ This action is **FINAL.** 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-13</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-13</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>21 June 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

1.   This Office Action is in response to Applicant's Amendment of application

10/584,010, filed 1/18/08, which is a 371 of PCT/CN04/00668.

Response to Arguments

2.   Applicant's arguments with respect to claims 1-13 have been considered but are

moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Antoshenkov

(US Patent 5379422).

With respect to claim 1, Antoshenkov teaches **setting a directory structure**

composed of a group of record deviations at the end of a data page (i.e. a directory

structure, or root directory, includes entries for deviations (pointers) to groups of

children directories with records (files), column 9, lines 19-36, on a data page, fig 7a), **in**

which, a record deviation is a position deviation of a record on the data page (i.e.

the file (record) pointers specify an absolute physical address where the directory or file

resides, column 9, lines 19-36, fig 7b), **each directory in the directory structure is**

called dir_slot, and each dir_slot stores the position deviation of one record (i.e.

the root directory structure stores pointers of the children directories, column 9, lines 19-

36), **and Searching for relative records in the dir_slot by adopting a locating**

algorithm (i.e. directories may be searched, column 5, lines 57-62, using subroutine

SEARCH DIRECTORY, column 13, lines 62-63), **after locating one certain dir_slot,**

slot, searching the relative group of records in order according to the record

deviation stored in the dir_slot and locating the record to be searched for

accuracy, and outputting the deviation of the record (i.e. directory is searched, and

directory entries (sub-directories and files) are searched, and a pointer to a matching file

is returned, column 13, line 61-column 14, line 15).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed
> or described as set forth in section 102 of this title, if the differences between the
> subject matter sought to be patented and the prior art are such that the subject
> matter as a whole would have been obvious at the time the invention was made
> to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was
> made.

This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

5.   Claims 2-6, and 11-13 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Antoshenkov (US Patent 5379422) in view of Noven (US Patent

5884297).

        With respect to claim 2, Antoshenkov teaches a directory structure, and how

directories and records are arranged and accessed within that structure, column 1, line

66 - column 2, line 15). Antoshenkov does not explicitly disclose putting a record to be

searched for in a field as claimed. **However, Noven teaches claimed putting the

record to be searched for into a field structure, and comparing the record on the

data page with the field structure** (i.e. a field is searched using the modified binary

search algorithm, column 15, lines 6-12). Antoshenkov and Noven are analogous art

because they are from the same field of endeavor of processing data structures using

algorithms.

        At the time of the invention, it would have been obvious to one of ordinary skill in

the art to modify the system of Antoshenkov with the teachings of Noven in order to use

binary search for look up requests (Noven, column 6, lines 1-5). The motivation for

doing so would have been to use a search algorithm that will help to create efficient

database search (Noven, column 5, lines 29-49).

        With respect to claim 3, Antoshenkov teaches a directory structure, and how

directories and records are arranged and accessed within that structure, column 1, line

66-column 2, and line 15). Antoshenkov does not explicitly disclose how the locating

search operates. However, Noven teaches **first endowing two variables low and up**
which represent the number of dir_slot **with initial values, in which, low is**
endowed with a value of 0, up is endowed with a value that is a total number of
dir_slot **on the page, then searching by adopting locating algorithm, and judging**
which dir_slot **the record belongs to** (i.e. binary search is executed to find a record,
and the variables FOUND and POS correspond to low and up, because FOUND
represents 0 initial values, and POS is equal to one half of the amount of data, column
23, lines 5-15). Therefore, the limitations of claim 3 are rejected in the analysis of claim
2, and claim 3 is rejected on that basis.

With respect to claim 4, Antoshenkov teaches a directory structure, and how
directories and records are arranged and accessed within that structure, column 1, line
66-column 2, line 15). Antoshenkov does not explicitly disclose that the locating
algorithm is a dichotomizing algorithm. **However, Noven teaches locating algorithm**
is dichotomizing locating algorithm (i.e. look up algorithm is a dichotomizing, or
binary search algorithm, column 15, lines 6-12). Antoshenkov and Noven are analogous
art because they are from the same field of endeavor of processing data structures
using algorithms. At the time of the invention, it would have been obvious to one of
ordinary skill in the art, having the teachings of Antoshenkov and Noven before him or
her, to modify the system of Antoshenkov with the teachings of Noven in order to use
binary search for look up requests, (Noven, column 6, lines 1-5). The motivation for
doing so would have been to use a search algorithm that will help to create efficient
database search (Noven, column 5, lines 29-49). Therefore, it would have been obvious

to combine Noven with Antoshenkov to obtain the invention as specified in the instant claims.

With respect to claim 5, Antoshenkov teaches an **algorithm is to take out a medial value continuously to compare with the field structure, until the value of up-low is not more than 1** (i.e. number greater than zero and less than one is multiplied by the number K, and incremented by 1 , column 12, lines 2-13).

With respect to claim 6, Antoshenkov teaches **after finding the record dir_slot, selecting records orderly from** the dir_slot **with the number of low to compare with the field structure, till the record is the last record of the dir_slot next to this record is a up record up_rec of the dir_slot with the number of up** (i.e. search is executed along a path, and keys are compared in order, after one has been examined, moving to the next key, column 13, line 61- column 14, line 5)**, if the record is found during this process, finishing the search on this page** (i.e. search is continued and returned for the current directory, column 14, lines 1-3)**, if the record is not found, turning to the next page to perform the same match** (i.e. if the key is not found, the remaining directory entries are searched, column 14, lines 4-6). Therefore, the limitations of claim 6 are rejected in the analysis of claim 3, and claim 6 is rejected on that basis.

With respect to claim 11, Antoshenkov teaches a directory structure, and how directories and records are arranged and accessed within that structure, column 1, line 66-column 2, line 15). Antoshenkov does not explicitly disclose that the locating algorithm is a dichotomizing algorithm. **However, Noven teaches locating algorithm**

is dichotomizing locating algorithm (i.e. look up algorithm is a dichotomizing, or binary search algorithm, column 15, lines 6-12). Therefore, the limitations of claim 11 are rejected in the analysis of claim 2, and claim 11 is rejected on that basis.

With respect to claim 12, Antoshenkov teaches a directory structure, and how directories and records are arranged and accessed within that structure, column 1, line 66-column 2, line 15). Antoshenkov does not explicitly disclose that the locating algorithm is a dichotomizing algorithm. **However, Noven teaches locating algorithm is dichotomizing locating algorithm** (i.e. look up algorithm is a dichotomizing, or binary search algorithm, column 15, lines 6-12). Therefore, the limitations of claim 12 are rejected in the analysis of claim 3, and claim 12 is rejected on that basis.

With respect to claim 13, Antoshenkov teaches **after finding the record dir_slot, selecting records orderly from** the dir_slot **with the number of low to compare with the field structure, till the record is the last record of the dir_slot next to this record is a up record up_rec of the** dir_slot **with the number of up** (i.e. search is executed along a path, and keys are compared in order, after one has been examined, moving to the next key, column 13, line 61- column 14, line 5)**, if the record is found during this process, finishing the search on this page** (i.e. search is continued and returned for the current directory, column 14, lines 1-3)**, if the record is not found, turning to the next page to perform the same match** (i.e. if the key is not found, the remaining directory entries are searched, column 14, lines 4-6). Therefore, the limitations of claim 13 are rejected in the analysis of claim 5, and claim 13 is rejected on that basis.

6.   Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Antoshenkov (US Patent 5379422) in view of Schmuck et al. (US Patent 5893086).

With respect to claim 7, Antoshenkov teaches a directory structure, and how

directories and records are arranged and accessed within that structure, column 1, line

66-column 2, and line 15). Antoshenkov does not explicitly disclose dividing a record or

directory in order to make room for a new record as claimed. However, Schmuck

teaches **claimed record number of** dir_slot i**s full due to inserting of one record**

onto a data page in a database, splitting the current dir_slot **into two ones, so as**

to increase a dir_slot (i.e. inserting a record in the directory may require splitting the

directory in two to make room for the new record, column 6, lines 33-41). Antoshenkov

and Schmuck are analogous art because they are from the same field of endeavor of

processing data structures using algorithms.

At the time of the invention, it would have been obvious to one of ordinary skill in

the art to modify the system of Antoshenkov with the teachings of Schmuck in order to

manipulate files and directories within the directory structure, (Schmuck, column 3, lines

51-56). The motivation for doing so would have been to use indexing and file access

methods to speed up lookups (Schmuck, column 6, lines 21-32).

With respect to claim 8, Antoshenkov teaches a directory structure, and how

directories and records are arranged and accessed within that structure, column 1, line

66-column 2, and line 15). Antoshenkov does not explicitly disclose dividing a record or

directory in order to make room for a new record. However, Schmuck teaches **if the**

total number of records on the dir_slot **where the record locates exceeds a**

maximum value after inserting the record into a chain table, moving all of the
dir_slots **behind this** dir_slot **one bit backward, thus, increasing adding one**
dir_slot, **and dividing all the records on the** dir_slot **where this record belongs to**
into two parts, and attaching these two parts of records to the two dir_slots
respectively (i.e. if inserting a record in the directory causes the directory to be full, the
directory may be split in two, and records may be moved to a different physical location,
column 6, lines 33-41). Therefore, the limitations of claim 8 are rejected in the analysis
of claim 7, and claim 8 is rejected on that basis.

With respect to claim 9, Antoshenkov teaches a directory structure, and how
directories and records are arranged and accessed within that structure, column 1, line
66-column 2, line 15). Antoshenkov does not explicitly disclose deleting a record as
claimed. However, Schmuck teaches claimed **deleting a record, taking it out from a**
chain table and setting a deleting mark to it (i.e. record is deleted, column 10, lines
55-64). Antoshenkov and Schmuck are analogous art because they are from the same
field of endeavor of processing data structures using algorithms.

At the time of the invention, it would have been obvious to one of ordinary skill in
the art to modify the system of Antoshenkov with the teachings of Schmuck in order to
manipulate files and directories within the directory structure, (Schmuck, column 3, lines
51-56). The motivation for doing so would have been to use indexing and file access
methods to speed up lookups (Schmuck, column 6, lines 21-32).

With respect to claim 10, Antoshenkov teaches a directory structure, and how directories and records are arranged and accessed within that structure, column 1, line 66-column 2, and line 15). Antoshenkov does not explicitly disclose merging directories. However, Schmuck teaches **obtaining** a dir_slot next to this dir_slot **first, and judging the record number of the next** dir_slot, **if the record number exceeds a minimum value, taking out a record from the next** dir_slot, **and adding it to the current** dir_slot (i.e. inserting a record in the directory may require splitting the directory in two to make room for the new record, column 6, lines 33-41**), if the record number is less than or equal to the minimum value, combining these two** dir_slots, **and deleting the current** dir_slot (i.e. two directories are merged, and the current one is deleted, column 10, lines 27-30).

Conclusion

6.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDRIA Y. BROMELL whose telephone number is (571)270-3034. The examiner can normally be reached on M-R 6:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexandria Y Bromell/   /S. A. A./
Examiner, Art Unit 2167   Primary Examiner, Art Unit 2162
June 3, 2008

/John R. Cottingham/
Supervisory Patent Examiner, Art Unit 2167